Anti-Surge Thick Film Chip Resistors
0603, 0805, 1206, 1210

Type: **ERJ P03, PA3, P06, P08, P14**



■ Features

- ESD surge characteristics superior to standard metal film resistors
- High reliability
  Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power···0.20 W : 1608(0603) size(ERJP03)
  0.25 W : 1608(0603) size(ERJPA3)
  0.50 W : 2012(0805) size(ERJP06), 3225(1210) size(ERJP14)
  0.66 W : 3216(1206) size(ERJP08)
- Reference Standards···IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	P	0	6	D	1	0	0	2	V

Product Code
Thick Film Chip Resistors

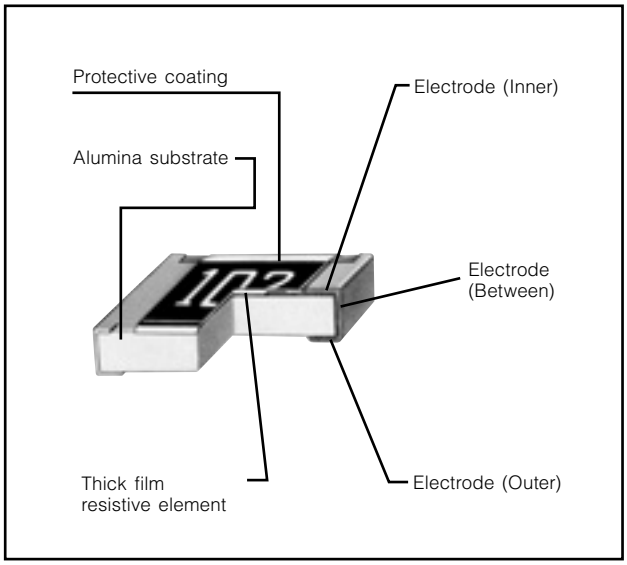
Size, Power Rating	
Type: inch	Power R.
P03 : 0603	0.20 W
PA3 : 0603	0.25 W
P06 : 0805	0.50 W
P08 : 1206	0.66 W
P14 : 1210	0.50 W

Resistance Tolerance	
Code	Tolerance
D	± 0.5 %
F	± 1 %
J	± 5 %

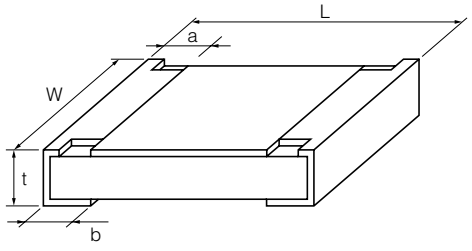
Resistance Value
The first two or three digits are significant figures of resistance and the third or 4th one denotes number of zeros following. Three digit type (±5%), four digit type (±1%, ±0.5%) Example: 222→2.2 kΩ, 1002→10 kΩ

Packaging Methods		
Code	Packaging	Type
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJP03 ERJPA3 ERJP06 ERJP08
U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJP14

■ Construction



■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm) L	W	a	b	t	Mass (Weight) [g/1000pcs.]
ERJP03 (0603)	$1.60^{\pm0.15}$	$0.80^{+0.15}_{-0.05}$	$0.15^{+0.15}_{-0.10}$	$0.30^{\pm0.15}$	$0.45^{\pm0.10}$	2
ERJPA3 (0603)	$1.60^{\pm0.15}$	$0.80^{+0.15}_{-0.05}$	$0.15^{+0.15}_{-0.10}$	$0.25^{\pm0.10}$	$0.45^{\pm0.10}$	2
ERJP06 (0805)	$2.00^{\pm0.20}$	$1.25^{\pm0.10}$	$0.25^{\pm0.20}$	$0.40^{\pm0.20}$	$0.60^{\pm0.10}$	4
ERJP08 (1206)	$3.20^{+0.05}_{-0.20}$	$1.60^{+0.05}_{-0.15}$	$0.40^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	10
ERJP14 (1210)	$3.20^{\pm0.20}$	$2.50^{\pm0.20}$	$0.35^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	16

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■ Ratings

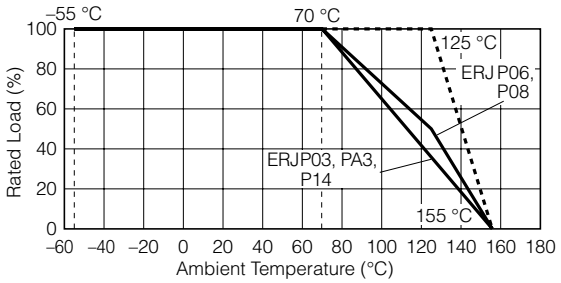
Type (inch size)	Power Rating[3] at 70 °C (W)	Limiting Element Voltage[1] (V)	Maximum Overload Voltage[2] (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)
ERJP03 (0603)	0.20	150	200	±0.5	10 to 1 M (E24, E96)	±150	−55 to +155
				±1	10 to 1 M (E24, E96)	±200	
				±5	1 to 1 M (E24)	R < 10 Ω : −150 to +400 10 Ω ≦ R : ±200	
ERJPA3 (0603)	0.25	150	200	±0.5, ±1	10 to 1 M (E24, E96)	±100	−55 to +155
				±5	1 to 1.5 M (E24)	±200	
ERJP06 (0805)	0.50	400	600	±0.5, ±1	10 to 1 M (E24, E96)	R < 33 Ω: ±300 33 Ω ≦ R: ±100	−55 to +155
				±5	1 to 3.3 M (E24)	R < 10 Ω : −100 to +600 10 Ω ≦ R < 33 Ω : ±300 33 Ω ≦ R : ±200	
ERJP08 (1206)	0.66	500	1000	±0.5, ±1	10 to 1 M (E24, E96)	±100	−55 to +155
				±5	1 to 10 M (E24)	R < 10 Ω : −100 to +600 10 Ω ≦ R : ±200	
ERJP14 (1210)	0.50	200	400	±0.5, ±1	10 to 1 M (E24, E96)	±100	−55 to +155
				±5	1 to 1 M (E24)	R < 10 Ω : −100 to +600 10 Ω ≦ R : ±200	

(1) Rated Continuous Working Voltage (RCWV) shall be determined from RCWV=$\sqrt{\text{Power Rating} \times \text{Resistance Values}}$, or Limiting Element Voltage listed above, whichever less.
(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from SOTV=2.5 × Power Rating or max. Overload Voltage listed above whichever less.
(3) Use it on the condition that the case temperature is below 155 °C.

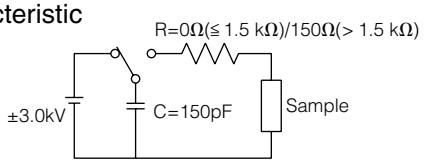
Power Derating Curve

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure on the right.

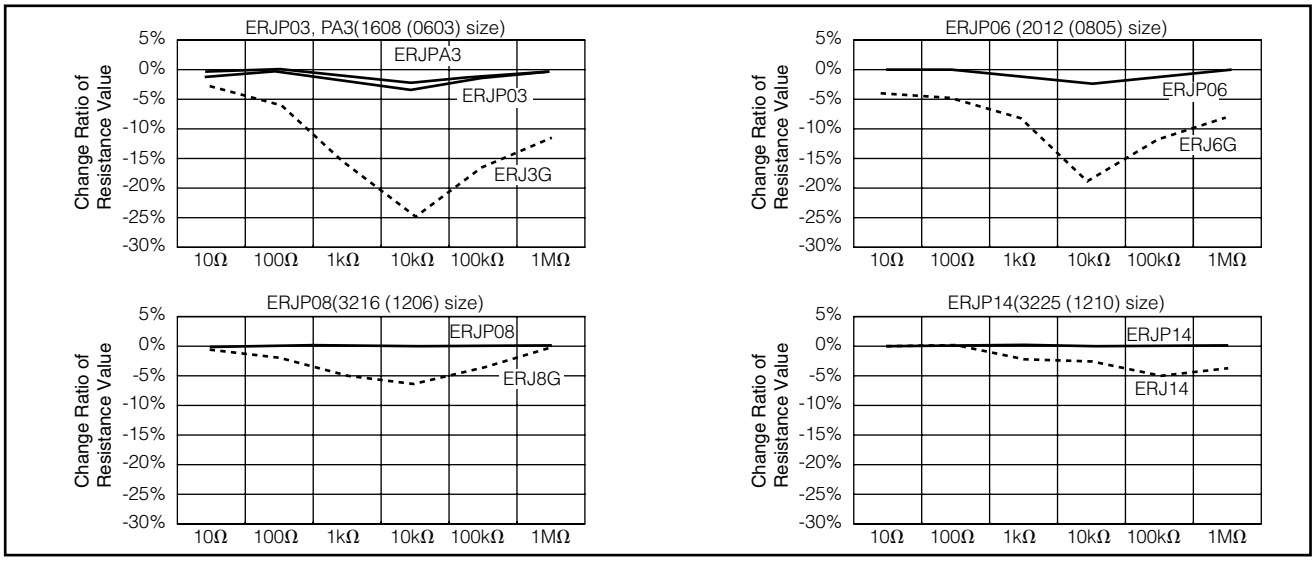
✻ When the temperature of ERJP14 is 155 °C or less, the derating start temperature can be changed to 125 °C. (See the dotted line)



■ ESD Characteristic



Anti-Surge Thick Film Chip Resistors(ERJP Type)
Thick Film Chip Resistors(ERJ Type)



Anti-Surge Thick Film Chip Resistors (Double-sided resistive elements structure) 0805

Type: **ERJ P6W**

■ Features

- ESD surge characteristics superior to standard metal film resistors
- High reliability
  Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power···0.50 W : 2012(0805) size(ERJP6W)
- High pulse characteristics···1.5 times higher than 0805 inch size Anti-Surge Thick Film Chip Resistors (ERJP06)
- Reference Standards···IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	J	P	6	W	F	1	0	0	2	V

Product Code
Thick Film Chip Resistors

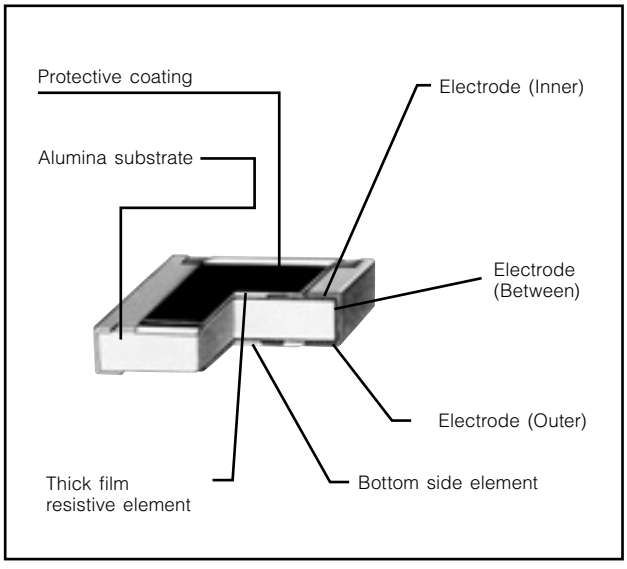
Size, Power Rating	
Type: inch	Power R.
P6W : 0805	0.50 W

Resistance Tolerance	
Code	Tolerance
F	± 1 %
J	± 5 %

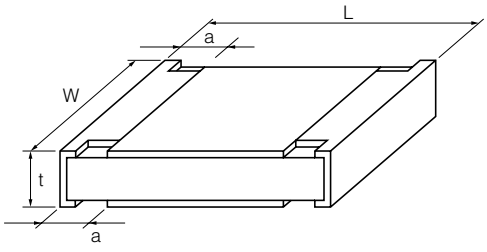
Resistance Value
The first two or three digits are significant figures of resistance and the third or 4th one denotes number of zeros following. Three digit type (±5%), four digit type (±1%) Example: 222→2.2 kΩ, 1002→10 kΩ

Packaging Methods	
Code	Packaging
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.

■ Construction



■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)				Mass (Weight) [g/1000 pcs.]
	L	W	a	t	
ERJP6W (0805)	$2.00^{\pm 0.20}$	$1.25^{\pm 0.20}$	$0.35^{\pm 0.20}$	$0.65^{\pm 0.10}$	6

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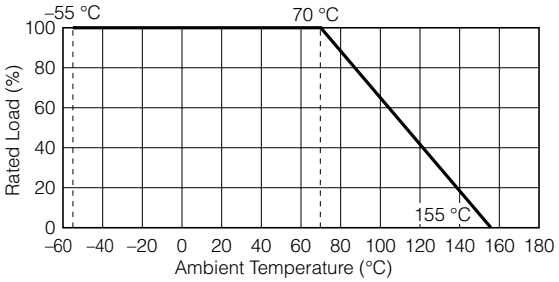
■ Ratings

Type (inch size)	Power Rating[3] at 70 °C (W)	Limiting Element Voltage[1] (V)	Maximum Overload Voltage[2] (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10⁻⁶/°C)	Category Temperature Range (°C)
ERJP6W (0805)	0.50	150	200	±1	10 to 1 M (E24, E96)	±200	−55 to +155
				±5	1 to 1 M (E24)	R < 10 Ω : −100 to +600 10 Ω ≦ R : ±200	

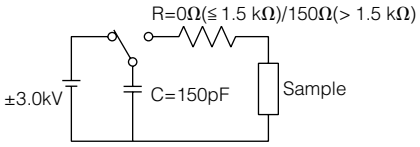
(1) Rated Continuous Working Voltage (RCWV) shall be determined from RCWV=$\sqrt{\text{Power Rating} \times \text{Resistance Values}}$, or Limiting Element Voltage listed above, whichever less.
(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from SOTV=2.5 × Power Rating or max. Overload Voltage listed above whichever less.
(3) Use it on the condition that the case temperature is below 155 °C.

Power Derating Curve

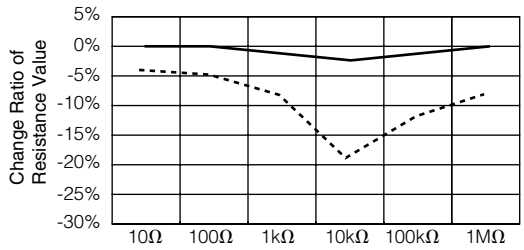
For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure on the right.



■ ESD Characteristic

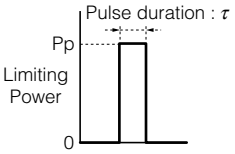


——— Anti-Surge Thick Film Chip Resistors(ERJP6W Type)
- - - - - - - - Thick Film Chip Resistors(ERJ6G Type)



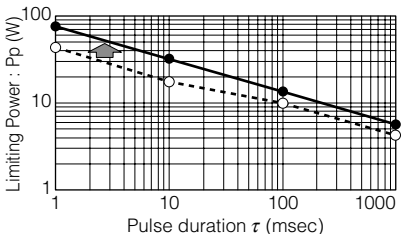
■ Limiting Power Curve

● In rush pulse Characteristic



Test cycle : 1 cycles
Spec : Resistance value = within ±1%

——— Anti-Surge Thick Film Chip Resistors(ERJP6W Type)
- - - - - - - - Anti-Surge Thick Film Chip Resistors(ERJP06 Type)



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Anti-Pulse Thick Film Chip Resistors
0805, 1206, 1210

Type: **ERJ T06, T08, T14**



■ Features

- Anti-Pulse characteristics
  High pulse characteristics achieved by the optimized trimming specifications
- High reliability
  Metal glaze thick film resistive element and three layers of electrodes
- Suitable for both reflow and flow soldering
- High power···0.25 W : 2012(0805) size
  0.33 W : 3216(1206) size
  0.5 W : 3225(1210) size
- Reference Standards···IEC 60115-8, JIS C 5201-8, EIAJ RC-2134B
- AEC-Q200 qualified
- RoHS compliant

■ Packaging Methods, Land Pattern, Soldering Conditions and Safety Precautions

Please see Data Files

■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11
E	R	J	T	0	6	J	1	0	0	V

Product Code
Thick Film Chip Resistors

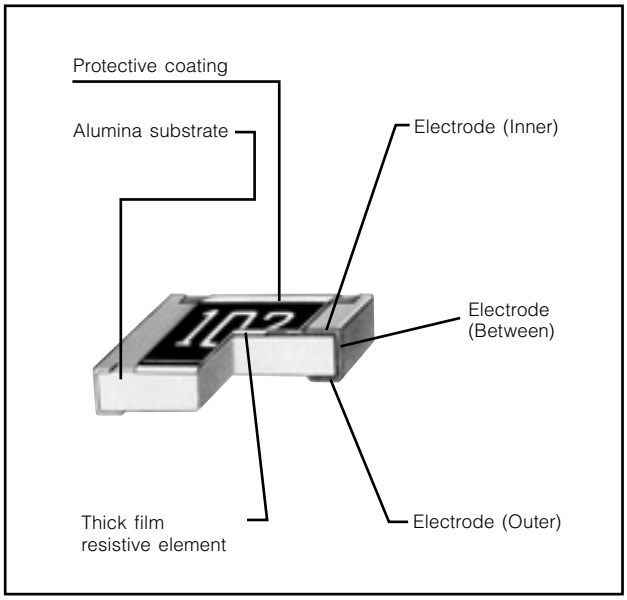
Size, Power Rating	
Type: inch	Power R.
T06 : 0805	0.25 W
T08 : 1206	0.33 W
T14 : 1210	0.5 W

Resistance Tolerance	
Code	Tolerance
J	± 5 %

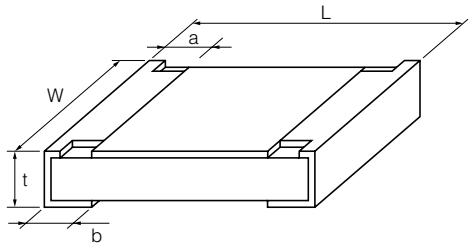
Packaging Methods		
Code	Packaging	Type
V	Punched Carrier Taping 4 mm pitch, 5,000 pcs.	ERJT06 ERJT08
U	Embossed Carrier Taping 4 mm pitch, 5,000 pcs.	ERJT14

Resistance Value
The first two digits are significant figures of resistance and the third one denotes number of zeros following. Example: 222→2.2 kΩ

■ Construction



■ Dimensions in mm (not to scale)



Type (inch size)	Dimensions (mm)					Mass (Weight) [g/1000pcs.]
	L	W	a	b	t	
ERJT06 (0805)	$2.00^{\pm0.20}$	$1.25^{\pm0.10}$	$0.25^{\pm0.20}$	$0.40^{\pm0.20}$	$0.60^{\pm0.10}$	4
ERJT08 (1206)	$3.20^{+0.05}_{-0.20}$	$1.60^{+0.05}_{-0.15}$	$0.40^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	10
ERJT14 (1210)	$3.20^{\pm0.20}$	$2.50^{\pm0.20}$	$0.35^{\pm0.20}$	$0.50^{\pm0.20}$	$0.60^{\pm0.10}$	16

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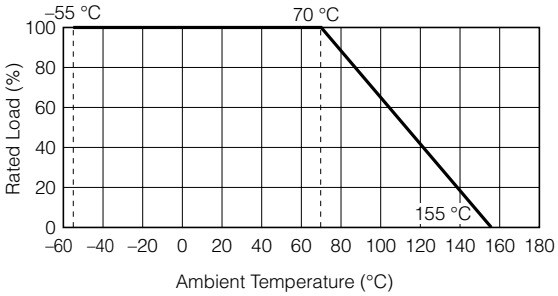
■ Ratings

Type (inch size)	Power Rating at 70 °C (W)	Limiting Element Voltage(1) (V)	Maximum Overload Voltage(2) (V)	Resistance Tolerance (%)	Resistance Range (Ω)	T.C.R. (×10^{-6}/°C)	Category Temperature Range (°C)
ERJT06 (0805)	0.25	150	200	±5	1 to 1 M (E24)	Less than 10 Ω : -100 to +600 Less than 33 Ω : ±300 More than 33 Ω : ±200	−55 to +155
ERJT08 (1206)	0.33	200	400	±5	1 to 1 M (E24)	Less than 10 Ω : -100 to +600 More than 10 Ω : ±200	−55 to +155
ERJT14 (1210)	0.5	200	400	±5	1 to 1 M (E24)	Less than 10 Ω : -100 to +600 More than 10 Ω : ±200	−55 to +155

(1) Rated Continuous Working Voltage (RCWV) shall be determined from RCWV=$\sqrt{\text{Power Rating} \times \text{Resistance Values}}$, or Limiting Element Voltage listed above, whichever less.
(2) Overload (Short-time Overload) Test Voltage (SOTV) shall be determined from SOTV=2.5 × Power Rating or max. Overload Voltage listed above whichever less.

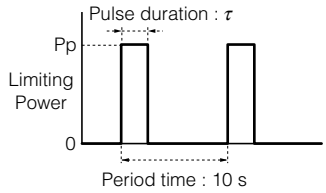
Power Derating Curve

For resistors operated in ambient temperatures above 70 °C, power rating shall be derated in accordance with the figure on the right.



■ Limiting Power Curve

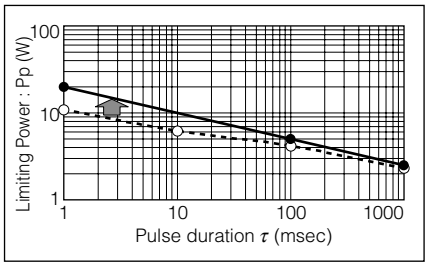
● In rush pulse Characteristic



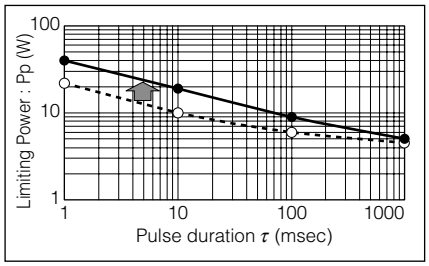
Test cycle : 1000 cycles
Spec : Resistance value = within ±5%

● : Anti-Pulse Thick Film Chip Resistors (ERJT Type)
○ : Thick Film Chip Resistors (ERJ Type)

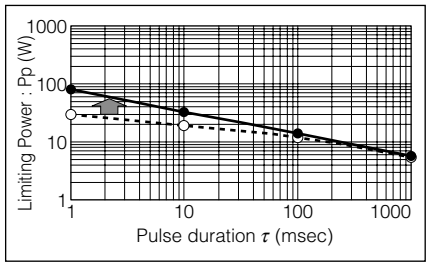
● **ERJT06** (2012 (0805) size)



● **ERJT08** (3216 (1206) size)



● **ERJT14** (3225 (1210) size)



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